The answer involves taking two steps: First, we must ask whether video dialtone is different from Bell Atlantic's other services in such a way that it would be expected to generate or "cause" less, or more, overhead per dollar of direct cost than other services. Bell Atlantic says that "it is unlikely that Bell Atlantic would incur an increase in its own marketing, advertising or customer service expenses significantly above that incurred upon introduction of any new telephone access service. If such unusual substantial additional costs were to be incurred, however, they would appropriately be treated as direct costs of providing video dialtone service, not as overhead."[28] Thus, according to this statement, video dialtone is apparently no different from other new services, with respect to generating overhead.

Second, we must examine the relationship between changes in overhead and changes in direct costs as a consequence of service expansion. Does overhead grow in proportion to growth in direct cost, or does it grow faster or more slowly? Consider the possibility of overhead growing less than in proportion to growth in direct costs. For example, while Bell Atlantic's average overhead per dollar of direct costs is 65 cents, the additional or marginal overhead accompanying an additional dollar of direct cost might be, say, only 50 cents.[29] In this case, the marginal overhead rate (50 percent), not the average rate (65 percent) would reflect the incremental overhead cost of video dialtone (as well as other services). If, in contrast, overhead grows in proportion to direct costs so that the overhead rate remains constant at 65 percent (i.e., the average and marginal rates are the same), the overhead that

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[28] Direct Case, Introduction and Summary, supra at 63.

[29] At the extreme, if overhead growth were zero regardless of additional growth in direct costs, we would have the fixed cost overhead case asserted by Dr. Taylor.

should be charged as an incremental cost to video dialtone is also equal to 65 percent of video dialtone's direct cost.

The key question, then, is, does overhead grow in the same proportion as direct cost? In response, I construct Table 4 with two categories of overhead included by Bell Atlantic and shown in Table 3. Table 4 suggests that for the Bell Atlantic companies, the overhead items shown grow roughly in proportion to growth in volume, measured either in revenues or access lines.[30] The smallest two companies -- C&P and Diamond State show expenses as the highest percentage of revenues, suggesting that overhead rises less than in proportion to a rise in volume. At the same time, the lowest percentages are recorded not by the largest companies, but by middle-sized ones (C&P Virginia and C&P W. Virginia). With respect to expenses per line, the highest numbers were recorded by smaller companies, but the smallest company -- Diamond State -- shows the second smallest per-line expense for the group. As a first approximation, then, it seems reasonable to conclude that these overhead expenses bear a constant relationship to line growth. More generally, with access line and revenue growth used as a proxy for growth in direct cost, Bell Atlantic's overhead grows in about the same proportion as direct cost. Thus, if Bell Atlantic records an overhead rate of 65 percent of direct costs, the incremental cost reflecting overhead expenses for video dialtone (or any other service) would approximate 65 percent of its direct costs.

[30] Ideally, I would want to include all of Bell Atlantic's overhead components instead of only two, and compare them with direct costs instead of with revenues and access lines. However, my source of data in Table 4 does not permit reliable compilation of these missing magnitudes.

TABLE 4

COMPARISONS AMONG BELL ATLANTIC COMPANIES: 1992

	Corporation Operations, Plant Non-Specific (Millions $)	Operating Revenues (Millions)	Expenses % of Rev.	Access Lines (Millions)	Expenses Per Line
New Jersey Bell	$529.4	$3154.5	16.8%	5.19	102.00
Bell Pa.	505.1	3134.2	16.1	5.46	92.51
C&P Maryland	295.9	1846.0	16.0	2.99	98.96
C&P Virginia	276.7	1752.6	15.8	2.81	98.47
C&P W. Virginia	89.1	561.9	15.9	0.71	125.49
C&P	105.4	538.6	19.6	0.92	114.57
Diamond State	43.5	233.7	18.6	0.45	96.67

Sources: FCC, Statistics of Common Carriers, 1992/93, pp. 55-74, at lines 187, 245, 276; pp. 159-161.

Because Bell Atlantic treats overhead as a fixed common cost, it views overhead allocations as an arbitrary process under which any allocation of overhead to video is regarded as simply reduced overhead charges to other services. Accordingly, Bell Atlantic chooses to load video dialtone direct costs with a 20 percent, not a 65 percent, overhead charge. To insist that direct costs for video be loaded with a 65 percent markup would be, in Bell Atlantic's view, insistence that prices be set to recover fully distributed cost.[31] Wrong. What I am saying has nothing to do with fully distributed cost procedures. My emphasis on a 65 percent loading reflects only the fact that each dollar of video dialtone direct cost generates (again as an approximation) about 65 cents in overhead, which is properly regarded as an incremental cost of video, not as a fixed shared or common cost to be allocated in some arbitrary fashion among

[31] In Dr. Taylor's words, "As shown in the tariff workpapers. Bell Atlantic's proposed prices are set below fully distributed cost and, on average, about 20 percent above the direct costs of the component services." Taylor supra at 6.

all services.[32] Consequently, Bell Atlantic's proposed overhead loading of 20 percent on video direct costs greatly understates the cost basis for the video dialtone tariff rates.

Bell Atlantic resists charging the full 65 percent because "market conditions" might not permit the recovery of such a large mark-up. As Dr. Taylor claims, "[t]he loadings chosen by Bell Atlantic are reasonable because they do not require VDT services to recover more of the overhead costs than VDT market conditions permit."[33] But this is only a way of saying that by pricing below incremental cost (which includes roughly a 65 percent overhead component) the company, indeed, intends to subsidize its video offerings!

The Failure of Tariff Rates to Cover Cost.

In light of the preceding discussion, the overarching question remains as to how the underassignment of investment and overhead costs affects the per-channel rates in Bell Atlantic's tariff filing. In response, I discuss briefly the major cost components in the filing, and how they relate to each other. Subsequently, I construct Table 5 to identify the major components of cost for Broadcast Channel Service and to show how each is affected by the underassignments. I conclude that Bell Atlantic's tariff rates, for both month-to-month and five-year contract service, would have to be more than doubled to cover actual incremental cost plus the share of fixed common cost computed on the basis of Bell Atlantic's methodology. Moreover, the rate required to cover incremental cost alone for month-to-month and five-year

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[32]For a detailed treatment of the arbitrary nature of outcomes arising from use of fully distributed cost pricing in regulated industries, see Ronald R. Braeutigam, "An Analysis of Fully Distributed Cost Pricing in Regulated Industries," Bell Journal of Economics (1980), pp. 182-196. He defines a fully distributed cost methodology as one with which "regulators do (somehow) allocate shared production costs to individual services. Each service is then required to generate revenues which will cover all of the costs associated with that service" at 182.

[33]Taylor, Affidavit, Bell Atlantic Direct Case, Introduction and Summary, October 26, 1995, Sec. III, Exhibit A at 7.

service is at least 75 percent and 83 percent above the respective tariff rates set by Bell Atlantic for the two services.

Bell Atlantic's rates are based on five cost categories. In its words:

> Bell Atlantic based its cost development on the requirements of the Reconsideration Order. [footnote omitted] As required in that Order, direct costs of Bell Atlantic video dialtone service include the [1] primary plant investment, [2] incremental costs associated with shared primary plant, [3] a reasonable allocation of other shared plant, and [4] an assessment of other costs, including maintenance and administration expenses. In addition, [5] all video dialtone services were assigned a share of overhead costs.[34]

1. Primary Plant Investment. Includes the costs associated with facilities used only for video dialtone. For example, Bell Atlantic identifies about $75 per potential subscriber for its Broadcast Channel Service as an incremental investment associated with such dedicated facilities.[35]

2. Incremental Costs of Shared Primary Plant. Many facilities shared by video and voice exhibit costs that depend on whether one or the other service is being carried. For example, an amplifier built to carry both one-way video and two-way voice may cost more than if only voice were carried. This difference is an incremental cost of video. If the amplifier costs, say, $100, but would cost only $60 for voice alone, then $40 is chargeable as an incremental cost of video. Conversely, if the amplifier costs $55 for video alone, then $45 is the incremental cost of voice. The total cost ($100) minus the two incremental costs ($40 and $45) is a remaining shared cost ($15), treated immediately below. Using Bell Atlantic data, I compute the total incremental cost for video dialtone, consisting of Categories 1 and 2, at $260 per potential subscriber as shown in Table 2 (row 5).

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[34] Direct Case, supra at 13.

[35] Id. Workpaper 5-3.

3. Other Shared Plant. This category, also called "fixed common cost" includes, for example, the $15 immediately above and the cost of the illustrative trench for cable described earlier. There is no clear cut "right" way to allocate fixed common costs to the services involved; any allocation is arbitrary. Bell Atlantic allocates them on the basis of the relative values of the incremental shared plant costs in Category 2. Thus, for Broadcast Channel Service, it allocates 28.32 percent of "other shared plant" costs to video dialtone.[36] The total of other shared plant, or fixed common costs, of $1,179 per potential subscriber in Table 2 (row 6) is divided between telephony and video as shown (rows 7 and 8).

4. Maintenance, Administration and other Costs. Includes the recurring expenses associated with video dialtone. Bell Atlantic tells the Commission essentially nothing about how these costs are estimated. For purposes here, I accept the company's figures on faith alone.

5. Overhead. Bell Atlantic computes overhead as about 65 percent of direct cost, where direct cost includes Category 4 figures on a per-year or per-month basis, plus the investment figures in Categories 1, 2 and 3 converted to an annual or monthly basis by adopting rates of depreciation and taking into account the cost of capital. As noted earlier, Dr. Taylor confuses overhead with fixed common costs in Category 3. As I emphasize above, overhead is not a fixed cost as he describes, but grows with service introduction and expansion. The overhead generated per dollar of video dialtone direct expenditure approximates the 65 cents that Bell Atlantic reports as the average across all of its services. Thus, each dollar of video dialtone direct cost should be loaded with 65 cents of overhead as an incremental cost

[36] Id. Workpaper 5-4. Total incremental shared plant cost is shown as $482.34 of which $136.61 or 28.32 percent is associated with video dialtone. Hence, 28.32 percent of "other shared plant" or fixed common cost is allocated to video dialtone.

component (not as an arbitrarily allocated fixed cost as Dr. Taylor describes) in addition to the other components of incremental cost associated with video dialtone.

The Five Categories Together. Table 5 shows how the costs in the five categories are brought together to provide the basis for Bell Atlantic's tariffs for Broadcast Channel Service. Depreciation and cost of money in rows 1 and 2 convert to an annualized basis the total investment assigned to video dialtone in Table 2 (row 10) and included in Categories 1, 2 and 3 above. Rows 3-7 cover recurring expenses in Category 4. Row 10 shows the inclusion of overhead, Category 5. The resulting rates of $0.05 and $0.045 per month per potential subscriber for month-to-month and five-year service respectively are shown in rows 11 and 12.

Now consider figures revised to reflect the underassignment of investment and overhead to video dialtone. With digital loop carrier as the baseline in Table 2, the total cost assignment to video dialtone of $1,353 per potential subscriber is 128 percent greater than Bell Atlantic's figure of $594. Correspondingly, estimates for depreciation and cost of money in Table 5 are revised upward by 128 percent. The expense figures (rows 3-7) are left unchanged, rates are adjusted to reflect a 65 percent (more precisely 64.05 percent) overhead loading and, for illustrative purposes here, the $0.005 discount for 5-year service is left unchanged. As shown, the revised rates are more than twice as large as Bell Atlantic's figures.

TABLE 5

RECURRING COST AND TARIFF RATES
PER BROADCAST CHANNEL

		Bell Atlantic Figures*	Revised Figures*	Percentage Increase
1	Depreciation	$0.1306	$0.2978	128%
2	Cost of money	0.1271	0.2898	128%
3	Income tax	0.0504	0.0504	0
4	Maintenance	0.0610	0.0610	0
5	Administration	0.0438	0.0438	0
6	Other tax	0.0110	0.0110	0
7	Host digital terminal software	0.0013	0.0013	0
8	Total annual cost	0.4252	0.7551	78%
9	Monthly cost	0.0354	0.0629	78%
10	Fully loaded cost (1.6405)	0.0581	0.1032	78%
RATE PER POTENTIAL SUBSCRIBER				
11	Month-to-month	0.05	0.1032	106%
12	Five-year	0.045	0.0982	118%

*Bell Atlantic Workpaper 5-6.
**Table 2 above, with digital loop carrier baseline.

To be sure, my revised figures include a fixed common cost allocation to video dialtone of $268 per potential subscriber (Table 2, row 8). If this allocation is excluded from video dialtone, with this service then responsible only for its incremental costs, my revised estimates would still be much higher than Bell Atlantic's figures in Table 5. For month-to-month service, I compute a figure of $0.0873 or 75 percent higher than Bell Atlantic's $0.05; and for five-year

service a figure of $0.0823 or 83 percent greater than Bell Atlantic's $0.045.[37] Of course, these percentages would be even greater if I were to take the upgraded existing telephone plant as the baseline, as shown in Table 2.

Clearly, Bell Atlantic's tariff rates fall far below the level required to cover the incremental cost of video dialtone -- let alone any "reasonable" allocation of fixed common costs. Thus, the rates fail by a wide margin the incremental cost test that is the cornerstone of the Commission's rules to safeguard against anticompetitive cross-subsidization.

Price Caps as an Inadequate Safeguard Against Cross-Subsidization

Even if all I say above were true, Bell Atlantic would insist that cross-subsidization is rendered impossible by price cap regulation to which it is subject. Thus, the company emphasizes that "in the pure price cap regulatory environment by which Bell Atlantic recently elected to be governed, there is no possibility that Bell Atlantic could raise prices of other regulated services to subsidize below cost rates for video dialtone service."[38] Dr. Taylor goes on to claim that "[b]ecause price cap regulation decouples prices from regulatory costs, users of other regulated services cannot be burdened by the inappropriate allocation of regulatory accounting costs or by investments that may not prove to be economic."[39] Wrong again. To explain why, I examine the price cap plan that, for Dover, is in effect in New Jersey, along with the Commission's price cap regime for interstate access services.

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[37] Video dialtone incremental cost of $1,085 (Table 2, row 5) is 83 percent greater than Bell Atlantic's total cost allocation to video dialtone of $594. Thus, I adjust upward Bell Atlantic's depreciation and cost of money figures by 83 percent. Applying the 1.6405 overhead loading against the revised monthly total of $0.0533, I compute a month-to-month rate of $0.0873 and a five-year rate of $0.0823, or 75 percent and 83 percent above Bell Atlantic's respective figures.

[38] Reply of Bell Atlantic, May 19, 1995 supra at 2.

[39] Taylor, March 6, 1995, supra, at 10.

By no stretch of the imagination can the New Jersey price cap regime be regarded as decoupling prices from costs. The plan permits an increase (or requires a decrease) in the individual rates for its regulated services by the percentage change in the prior year's Gross National Product Price Index minus a two percent productivity growth factor.[40] Accordingly, rates are to fall by two percent per year in real terms (subject to possible adjustments to reflect other exogenous factors). However, three characteristics of the plan show stunningly how Bell Atlantic has leeway to shift costs to its monopoly services.

First, the plan stipulates that the company will not be required to reduce real rates during any year in which the average intrastate rate of return on equity for its rate regulated services for the applicable twelve-month period falls below 11.7 percent. Consequently, if shifting video dialtone costs onto local telephony reduces the return to below 11.7 percent, the company can pass these costs onto local subscribers by denying a rate decrease to which they otherwise would have been entitled.

Second, if the company's intrastate return on equity exceeds 13.7 percent, the excess earnings are to be shared equally between the company and its customers (most likely by appropriate price reductions or monetary refunds). Consequently, by shifting video costs onto telephony, the company may avoid triggering this sharing provision, again denying customers benefits to which they otherwise would be entitled.

Third, the price cap plan expires at the end of 1999. Consequently, excessive video costs shifted to telephony in the next few years will provide the basis for a subsequent lower productivity factor than would exist in the absence of video dialtone. In this event, telephone customers will enjoy smaller real rate decreases after 1999 than otherwise.

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[40] Plan for Alternative Form of Regulation for New Jersey Bell Telephone Company, New Jersey Board of Regulatory Commissions, Docket No. T092030358.

For the price cap regime initiated by the FCC, Bell Atlantic recently opted for the relatively high productivity adjustment of 5.3 percent in return for price caps not subject to sharing.[41] This may be the plan to which Bell Atlantic was referring in the preceding quotation, since price caps without sharing are regarded in some quarters as "pure."[42] However, even without sharing, price cap regulation resembles rate-of-return regulation with a formal time lag. The federal price cap regime is subject to formal review after some interval whereupon past performance is evaluated (including the historic rate of return) and adjustments are made in the productivity factor and other elements of the formula to bring the projected rate of return in line with what regulators would regard as appropriate. In no sense can the company's prices be regarded in the long-run as frozen irrespective of costs.

To protect against cross-subsidy, price caps would have to be fully divorced from costs, meaning that the productivity factor would be fixed now and forever. Under this circumstance, "pure" price caps that offer full protection do not exist nor can they ever be expected to exist. The reason is simply that regulators cannot in the long run ignore the company's profits or losses. If profits are persistently high, regulators will be under strong public pressure to revise the price cap formula. Conversely, low profit levels or losses will bring pressure to adjust the formula in the other direction. Notably, Professor Alfred Kahn agrees that pure price cap regimes do not exist.

> To be sure, we have to my knowledge yet to see a scheme of pure price regulation. All of the schemes of which I am aware contemplate review within a few years of how they are working. Since the indexation formulas are inevitable

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[41] First Report and Order, Price Cap Performance Review for Local Exchange Carriers, CC Docket No. 94-1, FCC 95-132 (released April 7, 1995).

[42] See, for example, David E. M. Sappington and Dennis L. Weissman, *Designing Incentive Regulation for the Telecommunications Industry* (draft), American Enterprise Institute, Washington D.C. March 1995, Ch. 11, p. 12.

> based on estimates -- in particular, estimates of how the costs of the regulated companies may be expected to behave relative to the basis for indexation (such as the Consumer or GNP price index) -- it is difficult to imagine a scheme under which the government would surrender for all time the option of testing the accuracy of those estimates against actual experience. Such reexaminations have typically involved some correction of the formula if profits prove to be too high or too low -- in which event price regulation turns out to resemble rate of return regulation.[43]

Thus, we can anticipate the LECs seeking to game the price cap regimes by shifting costs and thereby establishing a basis during the review for a revised formula (for example, reducing or eliminating the productivity factor) to permit higher prices than otherwise.[44] With these costs passed on to consumers, these companies could subsidize video activities in competition with cable and other video suppliers at the expense of telephone ratepayers.

Consequently, it is not enough to ensure against telephone rate increases. To protect against cross-subsidy, users must be assured of no smaller rate decreases (through smaller productivity adjustments) than they would enjoy in the absence of video.

What the Commission Should Do

Assignment of Investment. Clearly, the Commission must probe further into Bell Atlantic's VDT tariff now based on an assignment of two-thirds of investment to telephony. It must press the company to demonstrate that the assignment -- far in excess of that required to upgrade the existing network, or even to install an entirely new digital loop carrier system -- is economically justified. Among the questions the Commission must raise are: What new

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[43] Affidavit of Alfred E. Kahn, *Review of Regulatory Framework*, Canadian Radio-television and Telecommunications Commission, Telecom Public Notice CRTC 92-12. Filed on behalf of AGT, April 13, 1993 p. 21. Emphasis in original.

[44] As an example, in a meeting with the California Public Utilities Commission to discuss plans for broadband network construction, Pacific Bell representatives stated that "[i]n order to accomplish fiber deployment by the year 2000, rather than 2015, an additional investment of 10-15 billion dollars would be required, and should the Commission desire Pacific to undertake a more aggressive investment program, funds would be available by lowering or eliminating the productivity factor. California PUC, Notice of Ex Parte Communication. Applications Nos. 92-06-002 and 92-05-004, August 23, 1993, pp. 2-3. Emphasis added.

narrowband services can be carried on the broadband network that cannot be adequately provided on alternative stand-alone systems, including an upgrading of the existing network? What investments would be required for such new services in addition to the investments shown on Bell Atlantic's worksheets? What reason is there to believe that such services, going beyond sheer speculation, would be economically viable? What basis is there for concluding that the broadband network would enable savings in telephony operations and maintenance over and above those enabled by upgraded or new stand-alone telephone networks? If the company cannot address these questions in satisfactory detail -- again going far beyond arm waving and cavalier responses -- the Commission must insist on a reassignment of costs, along the lines illustrated in Table 2.

An obvious problem facing the Commission is estimation of specific cost factors for stand-alone networks necessary for evaluating Bell Atlantic's tariff filing and its responses to the above questions. For illustrative purposes, I have used the $700 investment for digital loop carriers and $308 for upgrading existing networks. Clearly, however, actual costs vary as a consequence of innumerable considerations in local markets -- household density, topographical features, the mix of underground and aerial plant, the condition of existing plant, and many more.

One possible approach for the Commission involves pressing Bell Atlantic for upper-bound and lower-bound estimates of stand-alone telephone systems with essentially the same narrowband capability as the VDT network in Dover. Perhaps the Commission would then select middle-ranging estimates for its own determination of the appropriate assignment of the broadband network investment.

Undoubtedly, precise and fully satisfactory numbers will be impossible to obtain. But the Commission must not be left accepting Bell Atlantic's cost assignments simply because the

Commission cannot come up with exact answers about what the "correct" assignments are. Modified higher tariff rates based on approximations and reasonable assumptions are critical to forestalling anticompetitive cross-subsidy. Thus, for example, if it is reasonably clear than a digital loop carrier system is a good baseline, the requirement that Bell Atlantic use a figure such as $700 (but refined by Commission analysis) to double its cost assignment to video as illustrated in Table 2, would be far preferable to letting Bell Atlantic's tariff remain in effect on grounds that the basis for any modification would lack precision.

In this connection, we must remember that nothing in Bell Atlantic's thousands of pages is precise with respect to costs and sales projections. The incremental cost figures, the level of shared costs, overall network investment, the strength of market demand for broadcast and narrowcast channels, are all subject to uncertainty. Despite Bell Atlantic's cost quotations down to the last cent, all the figures are subject to the effects of cost overruns, performance shortfalls, and production delays.[45] Any new estimates on which the Commission bases mandated adjustments to the tariff would necessarily be imprecise, given the imprecision that already pervades Bell Atlantic's worksheets.

Operating and Maintenance Expenses. With reassignments of investment mandated by the Commission between telephony and video -- greatly increasing the share to video -- the Commission must reevaluate the assignments of recurring expenses as well. The great preponderance of Bell Atlantic's filing focuses on investment. Little is said about how operating and maintenance expenses -- though a large component of cost underlying the VDT tariff -- are divided between the two categories. Perhaps expenses are split at least in part based on the

[45]The effects of such market uncertainties are already evidenced in delays and cut backs in construction of VDT platforms. For a sobering account, see "Phone Giants Discover the Interactive Path is Full of Obstacles." Wall Street Journal, July 24, 1995 at 1.

relative assignments of investment outlays. If so, a large reassignment of expenses would be necessary to mirror the appropriate reassignment of investment, again resulting in a far higher burden on video than now exists.

Overhead. By no stretch of the imagination would the Commission be justified in permitting Bell Atlantic to retain a 20 percent overhead loading on video dialtone direct costs. The Commission must require Bell Atlantic to explain in detail (a) why video dialtone is expected to generate any less, or more, overhead per dollar of direct cost than other services, and (b) whether changes in overhead tend to bear a constant relationship to changes in direct cost, demonstrated by the company's past experience. In the absence of compelling answers to the contrary, the Commission should insist on a 65 percent loading of overhead for video dialtone as an approximation to the additional overhead caused by the provision of video dialtone.

The debate about overhead in this proceeding is especially disconcerting because surely this is not the first proceeding in which issues of overhead and direct expenses have been raised. If the Commission has, in the past, permitted firms under its jurisdiction to treat overhead as a fixed common cost to be allocated among services in whatever way the firms choose, the Commission has granted a stunning degree of leeway for anticompetitive cross-subsidization not only in video dialtone, but also in the wide range of telephone markets in which cable operators and other suppliers may compete. The existence of such leeway is demonstrated by the fact that Bell Atlantic exhibits a wide range of overhead loadings -- for example, from a 27 percent mark-up on its DS3 channel termination rate on a five-year basis to a 106 percent mark-up on a month-to-month basis.[46] Reinforcing this evidence is Bell Atlantic's statement that "the

[46] Direct Case, supra, Exhibit 1, Attachment E(1), at 1.

Commission granted LECs a great deal of flexibility in setting overhead levels."[47] Consequently, the Commission must review and modify its policy with respect to overhead assignments, paying careful attention to the causal relationships between direct costs and overhead.[48]

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[47] Direct Case, supra, at 67.

[48] It is worth noting recent regulatory actions in Canada, highly relevant to concerns here. In that county, too, telephone companies have proposed construction of integrated broadband networks for video and telephony -- the "Beacon Initiative." There, too, concerns about cross-subsidization have been raised by cable operators and others. In response to general apprehension about cross-subsidy and other anti-competitive threats posed by firms with both monopoly and competitive markets, the Canadian Radio-television and Telecommunications Commission (CRTC) recently decided to split the rate base, with one portion assigned to a company's monopoly telephone services, the other assigned to competitive services. CRTC, Implementation of Regulatory Framework -- Splitting of the Rate Base and Related Issues, Telecom Decision CRTC 95-21, October 31, 1995. In the case of Beacon, the CRTC has decided to assign the costs of the entire broadband network to the competitive segment. Only if, and when, channels are used for telephony will their costs be transferred to the monopoly segment, with transfer prices subject to regulatory scrutiny. For any number of reasons, we cannot expect the FCC to mimic the CRTC's decision. Still, it is sobering to observe how one regulatory agency has recognized the serious threat of cross-subsidy and has taken concrete and constructive steps to protect against it.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on November 20, 1995

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EDUCATION

Ph.D. Economics, 1957, Yale University
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EMPLOYMENT

1993-present--Consultant specializing in telecommunications economics. Retired from The RAND Corporation.

September 1979-March 1993--Senior Economist, The RAND Corporation, Santa Monica, California.

1978-1979--Associate Administrator, Policy Analysis and Development, National Telecommunications and Information Administration, U.S. Department of Commerce, Washington, D.C.

1968-1978--Manager, Communications Policy Program, The RAND Corporation, Santa Monica, California.

1967-1968--Director of Research, President's Task Force on Communications Policy, U.S. Department of State, Washington, D.C.

1957-1967--Economist, The RAND Corporation, Santa Monica, California.

1956-1957--Instructor, Yale University, New Haven, Connecticut.

1967--Lecturer, International Trade, UCLA.

1965-1966--Visiting Professor, International Trade and Economic Growth, Claremont Graduate School.

1958-1959--Lecturer, (Statistics for Economics and Business), California State College at Northridge.

Telecommunications Policy. Dr. Johnson has evaluated the prospects for direct satellite broadcasting, the use of telephone company facilities, and other means, as competitive alternatives to cable television. He earlier dealt with issues of (a) regulating international telecommunications in response to a growing competitive market structure, (b) maintaining universal domestic telephone service in response to pressures to increase rates for local service, and (c) the role of compatibility standards in telecommunications competition and innovation. As Associate Administrator for Policy Analysis at NTIA in 1978-1979, Dr. Johnson's responsibilities included recruiting staff for a research and analysis office of about 40 staff members, His office focused on issues of (a) restricting government regulation in the domestic telephone and broadcasting fields, (b) expanding competitive pressures in the international communications industry, (c) possibilities for making more effective use of the radio spectrum, and (d) drafting legislation for the Administration and pursuing other policy options in response to problems of protecting individual privacy posed by the rapid growth of computer-based information systems. As Director of Research, President's Task Force on Communications Policy, he directed the staff activities and preparation of the Final Report (the "Rostow" report) delivered to the President in 1968. The report and accompanying staff papers addressed a wide range of issues in the telephone, cable, and broadcasting fields, with numerous specific recommendations for national policy.

PROFESSIONAL MEMBERSHIPS/HONORS

Chairman, Board of Directors, Telecommunications Policy Research Conference, Washington, D.C., 1992.

Chairman, Organizing Committee, Seventeenth Annual Telecommunications Policy Research Conference, Airlie House, VA, 1989.

Board of Directors, Annual Telecommunications Policy Research Conference, 1989-1992.

Board of Directors, International Institute for Communications 1971-1978.

Advisory Board, Committee for Economic Development, 1975.

Telecommunications Panel, American Society of International Law, 1973-1975.

Telecommunications Committee, the Twentieth Century Fund, 1969-1970.

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